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A STUDY OF RESPONSES TO MUSIC

by

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ABSTRACT

Five female and six male subjects from a variety of occupational and educational backgrounds listened to the first movement of Antonin Dvořák's Symphony No. 5. They were asked to report, in written form, their experiences of the music in addition to reporting their perceptions of the mood of the music. They were also asked to report on their mood before and after they heard the music. Although subjects generally reported mood changes from before to after they heard the music, the directions of these mood changes displayed a substantial amount of variability and were related to perception of music mood. The dominant mode of response to the music was in the form of imagery which was not related to amount of formal music training. An inverse relationship was found between frequency of sensation as a response to the music and the perception of music mood as being relaxed and happy. Similarily, an inverse relationship was found between the reported change towards feeling more relaxed and happy after the music in comparison to before, and the frequency of sensation as a response to the music.

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CHAPTER I

Introduction

Overview

The purpose of this study was to thoroughly investigate the experiences of a small group of subjects in relation to one piece of music in order to suggest novel hypotheses about responses to music based on the data, as well as to relate the findings to current theories.

All subjects listened to the first movement of Antonin Dvořák's Symphony No. 5 (From the New World). They were asked to report, in written form, their experiences of the music in addition to reporting their mood before and after they listened to the music.

Relationships between mood reports and experience of music were studied, as well as between mood reports and personal data (background of subjects), and between experience of music and personal data.

This chapter begins with a description and discussion of previous research on the effects of music on mood and the use of the semantic differential in music research. Following this is a discussion of research on responses to music based on self reports. A brief description of the

circumstances surrounding the composition of Dvorak's symphony follows. The chapter closes with a restatement of the purpose of the study and a listing of predictions of results based on previous research.

Mood

In a recent pamphlet distributed by the Creative Arts Therapies National Associations, the discipline of music therapy is introduced by stating that "The power of music to soothe, energize, and bring people together is universally known" (Note 1). Several researchers have tested this hypothesis using self-report measures under experimental conditions.

In a study conducted by Schoen and Gatewood (1927), subjects listened to several selections of music, and were asked to report their mood before and after they heard the music. Schoen (1940) reports:

> The results showed that a mood change was produced in every listener, or that an existing mood was intensified when it conformed with the mood of the music. The consistency of the mood effects, that is, the tendency of the same composition to produce the same or a similar mood in every listener, was very marked.(p. 90)

Shatin (1970) conducted a study in which subjects

listened to four 8-minute sets of musical excerpts, each set containing music previously judged by a musician and psychologist to depict a progression in mood from one affective pole to its opposite, for example, sad to gay, and active to majestic. The vast majority of subjects reported experiencing mood changes while listening to the music, and a significant association was found between the direction of mood change previously judged to be represented in the music, and the direction of mood changes reported by subjects.

Taylor (1973) performed an experiment in which subjects listened to 10 1-minute excerpts of musical selections which were, based on previous theses and dissertations, precategorized as either stimulative or sedative. After hearing each excerpt, subjects were asked whether they felt more stimulated or more relaxed by the music. Subjects did not report similar mood responses to the precategorized expectations.

The findings of these three studies are contradictory. It seems that although music can influence changes in the mood of a group of subjects in a consistent direction, this is not always the case, depending upon the particular population being examined.

Researchers have also studied the effects of music on mood as defined by physiological measures such as galvanic

skin response, heart rate and respiration rate. Although music can influence these measures as apparent from studies conducted by Dreher (1948), Ellis and Brighouse (1952), Peretti and Swenson (1974), and Zimny and Weidenfeller (1963), this effect again seems to be dependent upon the kind of subjects being examined, the type of music, and the type of physiological response being measured.

Subjects in Zimny and Weidenfeller's study (1963) listened to three selections of music, one precategorized as "exciting" in mood, one "neutral" selection, and one selection precategorized as "calming" in mood. Although subjects generally experienced a change in galvanic skin response while listening to the exciting selection, no general change in this response was observed for the other two selections of music.

In Ellis and Brighouse's study (1952), subjects were asked to listen to several compositions differing in style and tempo. Although subjects in general experienced an increase in respiration rate while listening to each selection, no such change was observed in heart rate.

Another problem in studying the effects of music on mood arises in comparing self-reports and physiological responses as measures of mood. Several authors (Barger, 1979; Jellison, 1975; Taylor, 1973) who have used both of

these measures as dependent variables in testing the effects of music found that self-reports of mood may vary from measures of physiological arousal. This finding led Taylor (1973) to suggest that subjects may not always be aware of their physically stimulative or physically sedative responses to music. For this reason, caution should be exercised in comparing results from studies which employ the self-report method of measuring mood change in relation to music as this one does, to the results of experiments which employ a physiological response as a measure of mood.

The Semantic Differential in Music Research

Tannenbaum (1956) applied the semantic differential as a technique to test the effects of background music upon judgements of drama. Subjects watched several versions of a drama, either with or without background music, and were asked to rate the dramas on a number of semantic scales. Several scales were chosen to represent each of three dimensions of meaning: the evaluative dimension (general worth of the drama); the potency dimension (strength of the drama); and the activity dimension (how active or passive the drama is). Music background was found to significantly affect judgements of the potency and activity of all versions of the drama, with the largest effect occurring in activity judgements. However, the music had a negligible effect on the

evaluation of versions of the drama.

Although Tannenbaum's research emphasizes the differential effect of music on judgements of potency, activity, and worth of drama, the question arises as to whether the observation of this differential effect is generalizable to other situations, as in the effect of music on mood. This particular question is addressed in this study.

Experience of Music

Myers (1922) conducted an experiment in which subjects listened to several selections of music and were asked to record their experiences of them. From these reports, Myers concluded that there are four "types" of listeners: intra-subjective types who primarily respond to music kinaesthetically; associative types who primarily respond to music with images; objective types who primarily talk about the technical details of the music; and character types who talk about music as if it had a character (sad, cheerful, etc.).

Myers found that among the most highly musically trained and talented, associations (images) tended to be repressed, "because the music comes to be listened to for its own meaning and beauty, apart from the meaning and beauty derived from associations" (p. 61).

Similarily, Vernon (1930), in a study in which subjects listened to several pieces of music after each of which they were to record their experiences while listening, concluded that visual associations occurred in the majority of subjects. However, imagery that followed the music and was almost the sole source of pleasure was rare, incompatable with an objective attitude towards music, almost wholly absent among the most musical, and unrelated to sex.

More recently, Hargreaves and Colman (1981) conducted an experiment in which adult subjects listened to excerpts representing a wide range of musical styles. Sixteen groups of three excerpts were presented, and subjects were asked to think of a way in which any two were alike in some important way that distinguished them from the third excerpt. Responses were content analyzed in terms of five categories: "Categorical", which involved responses such as "pop", "folk", "classical"; "Objective-analytic", which involved reference to the technical elements of the music; "Objective-global", which involved responses such as "American" or "religious"; "Affective", which involved emotional and evaluative responses to music such as "cheerful", or "weird"; and "Associative", which involved extra-musical associations (imagery) to the music such as "the sea".

The frequency of associative (imagery) responses was found to be so low that it was not included in the analysis. The authors comment that in a pilot study involving school children, the children produced a significantly higher proportion of associative responses than the adults did in this study.

The findings from these studies suggest that imagery (associative) responses to music are not especially pervasive, and when they do occur, they are usually the responses of less musically trained or younger subjects. However, the results of two research studies contradict these conclusions.

Leonard and Lindauer (1973), in studying the relationship between levels of participation in aesthetic areas (English, art, music, theater), and vividness of imagery to 45 words, found a significant positive relationship between the two variables. No sex difference was evident.

More recently, Osborne (1981) conducted two experiments in which he studied the self-reported experiences of subjects in relation to a selection of music. He analyzed the self-reports in terms of frequencies of thoughts, emotions, images and sensations. In both experiments he found the predominant mode of experience to be imagery. Subjects in both experiments

had a mean number of greater than five years of musical education which led the author to conclude that "The predominance of imagery responses argues against the speculation that musically sophisticated listeners experience music in a totally different way than musically unsophisticated listeners" (p. 135).

The contradictory evidence on the predominance of imagery as a response to music as well as its relationship to musicality could be a result of differences in definitions and methodologies employed by the various researchers.

Both Myers and Vernon analyzed open-ended reports of subjects' experiences of entire musical works. Rather than try to systematically categorize responses in terms of frequencies of images, emotions, etc., and compare the number of responses in each category, both authors related their findings in terms of overall impressions of the data.

Hargreaves and Colman did not deal with subjects' experiences of entire musical works, but rather with how they described similarities and differences in short excerpts of music. Subjects were only allowed to produce one answer per comparison.

Osborne, like Myers and Vernon, dealt with open-ended

reports of experiences of entire musical works. However, rather than report overall impressions of responses, he analyzed each subject's written report in terms of the proportion of responses falling into each of several operationally defined categories. With this method, comparisons of categories could be made in terms of quantity of responses within each subjects's report as well as comparisons between subjects.

Because of these differences in methodology, caution should be exercised in making broad generalizations based on these studies.

In terms of the relationships amongst the various categories of responses to music, several researchers have suggested that emotional interpretations of music may be the basis of visualization phenomena.

Odbert, Karwoski and Eckerson (1942) conducted a study in which subjects were asked to associate mood (emotion) and color names to brief musical selections. They found that colors named with a musical selection were systematically related to the named mood of a musical selection, and that subjects who disagreed on the mood of a selection tended to report different colors for it. The authors suggested that "music establishes a mental state which includes a mood response, and that this mood response, whether verbalized or not, establishes a

determining tendency which leads to the naming of colors according to our cultural traditions" (p. 169).

Vernon (1930) also suggests a relationship between emotion and visualization based on his overall impressions of subjects' responses to music.

The Symphony

Antonin Dvořák was born near Prague, Czechoslovakia in 1841, and died in that city in 1904 (Scholes, 1964). He was in New York as head of the National Conservatory from 1892 to 1895, after which he returned to Prague. In 1893, during his stay in New York, he composed his Symphony No. 5 (sometimes numbered 9) to which he gave the name "From the New World" (Clapham, 1966). Several authors (Fischl, 1970; Stefan, 1971; Young, 1970), as well as Dvořák himself (interview appearing in Clapham, 1966), report that Henry Wadsworth Longfellow's poem, "The Song of Hiawatha" had an influence on the composer as well as on the symphony, especially in the second movement. The symphony also contains melodies that embody the peculiarities of negro and indian music.

Predictions

Predictions of the results of this study based on the foregoing discussion are as follows:

1. The majority of subjects will report a change between before and after the music mood.
2. Based on Osborne's (1981) definitions of response categories, imagery will be the dominant mode of response to the music, and the predominance of imagery will not be related to music training.
3. A relationship will be found between the emotion and imagery categories of response to the music.
4. The subjects' experiences of the music may reflect the influence of negro and indian music, culture, and legend (Hiawatha) upon Dvořák and the symphony.

Summary

This chapter began with a description of previous research on the effects of music on mood and the use of the semantic differential in music research. This was followed by a discussion of research on responses to music, with an emphasis on methodological problems. A brief description of the circumstances surrounding the composition of the New World Symphony followed. The predictions of the results of this study based on previous research were: 1) That the majority of subjects would report changes between before and after the music mood; 2) That the predominant mode of response to the music would be imagery, which would not be related to music training; 3) That a relationship would be found between the emotion and imagery categories of response; and 4) That the

experiences of the music might reflect the influence of negro and indian culture and legend upon Dvořák and upon the symphony.

CHAPTER II

Method

Subjects

The subjects were six male and five female volunteers from a variety of occupational and educational backgrounds. The occupations represented were engineer, student, receptionist, secretary, painter and decorator, technician, researcher, and management trainer. The mean age of the group was 25.5 years with a range of 20-29 years.

Materials

The musical selection used was the first movement of Antonin Dvořák's Symphony No.5 (From the New World) performed by the London Symphony, with Eugene Ormandy conducting. This performance was recorded for "The Enjoyment of Music/The Norton Scores" series, produced by W.W. Norton and Co., Inc., New York, in cooperation with Columbia Special Products.

Procedure

Subjects were tested individually using the same procedure. Each subject was seated in a couch opposite two speakers in a large living room setting. The

experimenter read standardized instructions explaining the method and goals of the study (See Appendix A). The subject was then asked to answer the first two questions on his/her questionnaire (See Appendix B) which involved reporting on present mood. The subject was then told that he/she was going to hear some music, and to try to put his/her attention "wholly on the music" (Appendix A). The lights were dimmed, the experimenter left the room, and the subject listened to the recording.

When the music concluded, the subject was asked to answer the rest of the questions on his/her form (Appendix B), which involved an open-ended description of his/her experience of the music, a report on mood after the music concluded, a retroactive account of mood before the music was played, a report of the perceived mood of the music, and background information on the subject.

Design

Introduction. A case study approach was utilized to explore the experiences of the subjects in relation to the music. This method is ideal for examining behavior in great detail as well as for generating hypotheses (Neale & Liebert, 1980), which were the goals of this study.

Subjects were chosen to represent a wide variety of educational and occupational backgrounds as well as a

broad range of training and interest in music in order to facilitate the exploration of as many variables as possible. The self-report techniques employed to gather data about the experiences of subjects were not restricted to testing any one hypothesis, but were designed for the similar purpose of optimum exploration of variables.

The statistic most often employed in the analysis of data was the correlation coefficient, which is useful in exploratory research where the degree of relationship between variables is unknown (Lehmann & Mehrens, 1971). However, because a correlation does not indicate causation, cause-effect relationships were not tested in this study.

Inferential statistics were not employed in the analysis of results because subjects were not chosen on the basis of their membership in a particular population, but rather because of their variability in background.

Mood Measures . Subjects were asked to report their mood on three occasions in the experiment: before they heard the music (pretest); after they heard the music (posttest); and a retrospective report on their before the music mood after they had heard the music (retroactive pretest). Also, subjects were asked to report on the mood of the music.

The same two measures of mood were employed on all four occasions in order to facilitate comparisons between the trials. One measure involved an open-ended question about mood. The other measure involved rating mood on a form of the semantic differential (Osgood, Suci & Tannenbaum, 1957). In factor analysis work with the semantic differential, three basic factors or dimensions of meaning have repeatedly exhibited themselves across concepts. The first is identified as a general evaluative factor and is characterized by such scales as good-bad, fair-unfair, and negative-positive. The second dimension is identified as a potency factor and is characterized by such scales as strong-weak, large-small, and happy-sad. The third dimension is identified as an activity factor and is characterized by such scales as fast-slow, active-passive, and tense-relaxed.

In this study, the concept of mood was examined by three semantic scales, one to represent each dimension. The evaluative factor was represented by "negative-positive"; the potency factor by "sad-happy"; and the activity factor by "tense-relaxed". The order of the scales was randomized for each subject in order to reduce any "halo" effect that might have been in operation.

The three semantic scales were numbered in the following way:

Tense ___ ___ ___ ___ ___ ___ ___ Relaxed
1 2 3 4 5 6 7

Negative ___ ___ ___ ___ ___ ___ ___ Positive
1 2 3 4 5 6 7

Sad ___ ___ ___ ___ ___ ___ ___ Happy
1 2 3 4 5 6 7

Comparisons were made between pretest and posttest mood on the three scales in order to explore the magnitude and direction of reported change.

Comparisons were also made between reported retroactive pretest and posttest mood on all three scales. The retroactive pretest was included in this study because of research conducted by Howard, Ralph, Gulanick, Maxwell, Nance and Gerber (1979) on the possibility of internal invalidity in pretest-posttest self-report evaluations.

In one experiment performed by this research group, subjects participating in a communication skills workshop took a test for dogmatism before and after the workshop which involved a self-assessment of the way subjects perceived their own interactions with other people. It was found that although subjects generally considered themselves to be less dogmatic after the workshop as evident from interviews with the subjects, the pretest-

posttest comparison of dogmatism test scores showed that subjects actually were more dogmatic after the workshop than before. The researchers concluded that subjects did actually think that they had become less dogmatic, but because of their workshop experiences, they also realized that they were more dogmatic than they thought they were at the beginning of the workshop, which would explain the results. For example, a subject may have rated her level of dogmatism at a "4" before the workshop. Then, during the workshop, the subject discovers through a series of exercises, that she is actually more dogmatic than she thought she was. After the workshop, the subject rates her level of dogmatism at a "5", which shows her to be more dogmatic than when she started. But, if the subject had been given a retroactive pretest to judge again her dogmatism level before the workshop, the rating might have been a "6". If a retroactive pretest-posttest comparison was made, it would indicate, quite accurately, that the subject felt herself to be less dogmatic after the workshop in comparison to before.

In the light of the above discussion, a retroactive pretest-posttest comparison of mood rating was carried out in this study in addition to a pretest-posttest comparison. This allowed for the determination of whether subjects might have changed their rating standards in relation to judgements about their mood between pretest and posttest measures. If the experience of the music had

influenced subjects' judgements about their pretest mood in a uniform direction, this influence would be evident in comparing pretest-posttest differences in mood to retroactive pretest-posttest differences in mood.

Pearson product-moment correlations were calculated between the reported change in pretest-posttest mood and the perceived mood of the music on each of the three semantic scales in order to ascertain the degree of relationship between the two variables.

In addition, the quantatative measures were compared to the open-ended questions about mood.

Experience of Music . The open-ended reports of experiences of the music (See Appendix B, question 3) were content analyzed in terms of frequencies of thoughts, emotions, sensations and images according to the criteria employed by Osborne (1981). Thoughts were defined as thinking about something in an abstract way rather than describing it as an emotion, sensation, or image; for instance, "The solo flute was easy to remember". Generally, emotions had a clear positive or negative hedonic tone, for example, "A sense of fear and foreboding came over me". Sensations were descriptors of bodily sensations which were affectively neutral, for instance, "My body felt heavy". Images were defined as mental pictures which came to mind during the music, for example,

"It seemed as if the sun was shining in the early morning". Images were not confined to the visual modality. Responses such as "I heard a choir singing" were also scored as images.

The reports were scored independently by two judges and interscorer reliability compared across each category of response. The mean percentage of agreement across all categories was 92%. The mean frequency of the judges' ratings for each subject on each category was used in final data analysis.

The mean frequencies of responses in each category were compared for the entire group to ascertain whether a particular category of response was predominant. In addition, Pearson product-moment correlations were calculated between the frequencies of all possible pairs of response categories.

Mood, Background, and Experience of Music.

Relationships between mood and background measures, mood and experience of music, and background measures and experience of music were explored using the Pearson product-moment correlation.

CHAPTER III

Results

Mood Measures

Figure 1 shows the group means of reported ratings of pretest, posttest, and retroactive pretest mood on the semantic scales. Generally, subjects rated themselves as feeling more relaxed, positive and happy on the posttest compared to the pretest, the largest change occurring on the relaxation (activity) dimension.

In comparing group means of pretest-posttest differences in mood to retroactive pretest-posttest differences, subjects reported more change towards feeling more happy and relaxed and less change towards feeling more positive in retroactive pretest-posttest as opposed to pretest-posttest comparisons.

Table 1 shows the frequency and direction of change between pretest and posttest measures of mood on the semantic scales. Although a majority of subjects reported a rise on each scale, the direction of change was not markedly uniform.

Table 2 shows the frequency and direction of change between retroactive pretest and posttest mood scores on the three semantic scales. In comparing these results

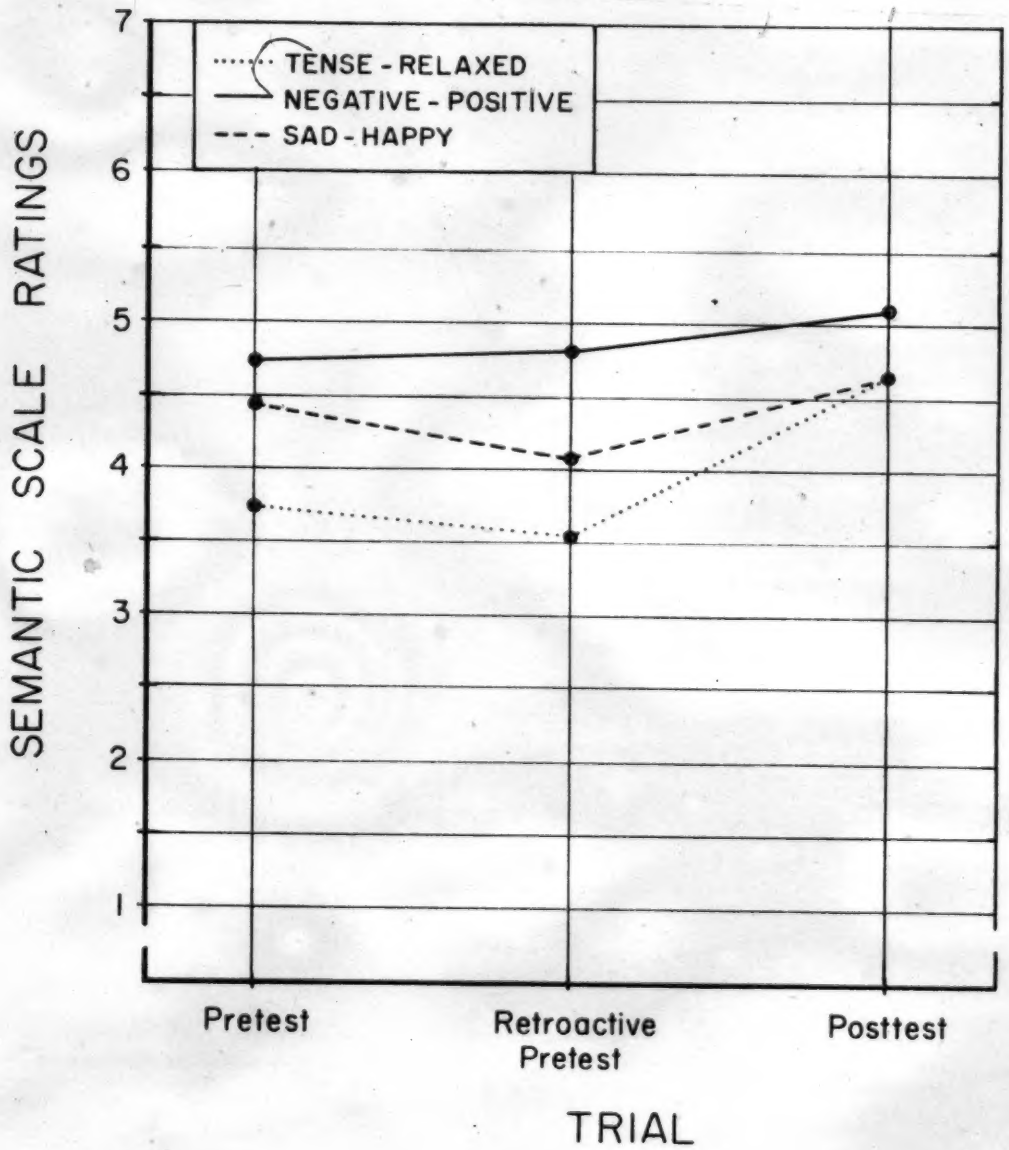

FIGURE 1. Group means of reported ratings of mood on the semantic scales.

Table 1

Frequency and Direction of Change Between Pretest and Posttest Mood Measures

	Semantic Scale		
Direction	Tense-Relaxed	Negative-Positive	Sad-Happy
Up	8	6	6
Same	2	2	2
Down	1	3	3

Table 2

Frequency and Direction of Change Between Retroactive Pretest and Posttest Mood Measures

	Semantic Scale		
Direction	Tense-Relaxed	Negative-Positive	Sad-Happy
Up	7	4	8
Same	3	5	0
Down	1	2	3

with pretest-posttest changes in mood, less subjects reported a change towards feeling more relaxed and positive, more subjects reported feeling the same in terms of relaxation and positiveness, and more subjects reported a change towards feeling more happy.

Table 3 contains the means, standard deviations, and ranges of ratings of music mood on the three semantic scales. The wide ranges of ratings suggest that subjects' perceptions of music mood were quite varied.

Table 4 shows the Pearson product-moment correlations between the change in pretest-posttest ratings of mood and the rating of music mood. These coefficients indicate that those subjects who reported the largest changes towards feeling more relaxed and happy after the music also tended to rate the mood of the music as more relaxed and happy. The degree of relationship between the amount of change in pretest-posttest mood and reported mood of music was low for the "negative-positive" (evaluative) semantic scale.

The comparison conducted between the semantic differential and the open-ended questions about mood yielded indeterminate results. Although there seemed to be a general agreement between the two measures in relation to the direction of change between pretest and posttest mood, this comparison could only be superficial

Table 3

Distribution of Ratings of Music Mood on the Semantic Scales

	Semantic Scale		
Statistic	Tense-Relaxed	Negative-Positive	Sad-Happy
Mean	2.91	4.36	4.09
Standard Deviation	1.38	1.27	1.51
Range	1-6	2-7	2-6

Table 4

Pearson Product-moment Correlations Between the Change in Pretest-Posttest Rating of Mood and Rating of Music Mood

Semantic Scale		
Tense-Relaxed	Negative-Positive	Sad-Happy
r =.73	r =.28	r =.63

due to the qualitatively different information provided by each instrument.

Experience of Music

Table 5 contains the mean frequencies and percentages of thoughts, emotions, images and sensations reported by subjects in their experience of the music. The predominant mode of reported experience was in the form of imagery. The most frequently occurring theme of the imagery was nature (outdoors), comprising 44% of all images recorded for the entire group of subjects.

Pearson product-moment correlation coefficients calculated between all possible pairs of the four response categories were all low ($|\ r\ | < .40$) except for the $r = .59$ correlation found between frequencies of emotions and images.

Mood and Experience of Music

In order to explore the relationship between mood reports and the experience of music, Pearson product-moment correlations were calculated between the perception of music mood on the semantic scales, and frequencies and proportions of thoughts, emotions, images and sensations. All of these correlations were low ($|\ r\ | < .40$) except for the negative correlations found between music mood ratings

Table 5

Mean Frequencies and Percentages of Thoughts, Emotions, Images and Sensations as Responses to Music

	Category of Response			
Statistic	Thoughts	Emotions	Images	Sensations
Mean Frequency	2.45	3.8	4.4	1.7
Mean Percentage	21.45	29.18	36.64	12.91

and frequencies of sensations reported in Table 6.

Pearson product-moment correlations were calculated between the change in pretest-posttest mood and the frequencies and proportions of thoughts, emotions, images and sensations. These correlations were all low ($|\underline{r}| < .40$) except for the negative correlations found between changes in pretest-posttest mood and frequencies of sensations reported in Table 7.

These results indicate that those subjects who reported more sensations as responses to the music also reported perceiving the mood of the music as less relaxed and happy in addition to reporting less change towards feeling more relaxed and happy after the music.

As evident from Tables 6 and 7, correlations between frequencies of sensations and the evaluative (negative-positive) dimension of the semantic differential were lower than for the other two semantic scales.

Background and Experience of Music

The mean number of years of reported formal music training for the group was 3.72 years, with a range of 0-12 years. Ten subjects reported playing a musical instrument. The mean number of hours spent listening to music per week for the group was 10, with a range of 2-20

Table 6

Pearson Product-moment Correlations Between Music Mood Rating and Frequency of Sensation as Response to Music

Semantic Scale		
Tense-Relaxed	Negative-Positive	Sad-Happy
r =-.56	r =-.41	r =-.52

Table 7

Pearson Product-moment Correlations Between the Change in Pretest-Posttest Rating of Mood and Frequency of Sensation as Response to Music

Semantic Scale		
Tense-Relaxed	Negative-Positive	Sad-Happy
r =-.69	r =-.44	r =-.77

hours. All subjects reported enjoying several types of music, with 10 subjects reporting "classical" as one of their choices. Only one subject claimed to have heard the music before, and was able to identify the title and composer.

In order to explore the relationship between the experiential background of subjects and their reported experiences of the music, Pearson product-moment correlations were calculated between age, sex, musical training and hours per week spent listening to music, and frequencies and proportions of thoughts, emotions, images and sensations. These correlations were all low ($|\ r\ | < .40$) except for the $r = .57$ correlation found between hours per week spent listening to music and frequency of emotions.

Background and Mood Measures

Pearson product-moment correlations were calculated between measures of reported pretest, posttest, retroactive pretest and music mood, and the background variables of age, sex, musical training, and hours per week spent listening to music. A correlation of $r = .60$ was found between the change in pretest-posttest mood on the activity dimension (tense-relaxed) of the semantic differential and the number of years of formal music training. Also, a Pearson product-moment correlation of r

=-.65 was found between the number of years of formal music training and perceived music mood on the activity dimension of the semantic differential. All other correlations were low (| $\underline{r}$ |< .40).

CHAPTER IV

Discussion

Mood

As predicted, the majority of subjects reported changes in pretest to posttest mood, both in quantitative and qualitative mood reports. However, the directions of these changes as evident from the semantic scales were not uniform. These results suggest that although subjects listened to the same piece of music, the effects of this situation on mood reports varied, which lends support to Taylor's findings that precategorizing music as to its effects on mood is not very fruitful. This conclusion has implications in the field of music therapy.

Gaston (1968), in listing the processes involved in music therapy, suggests that music evokes affectively ordered behavior. He writes:

> The general behavior of groups can be controlled, or at least influenced, by appropriately chosen music. Slow tempos, smooth (legato) lines, simple harmonies, and little dynamic change are characteristic of music that tends to reduce or sedate physical activity and, possibly, to enhance the contemplative activity of individuals; fast tempos, detached (staccato) lines, complex and dissonant harmonies, and abrupt dynamic changes tend to increase or stimulate physical activity and, possibly, to reduce mental activity. Given a knowledgeable use of music, the desired result is

usually achieved with groups" (p. 37-38).

The findings of this study shed doubt on this analysis. Perhaps a more fruitful approach to predicting the effects of music upon individuals might be to examine how the individual subject perceives and understands the technical qualities of the music rather than predicting these effects from an analysis of the technical features alone. In this study, although the ranges of ratings of perceived music mood were quite broad, the subjects that reported perceiving the music as more relaxed and happy tended also to report feeling more relaxed and happy in comparing pretest-posttest mood. This suggests, as Wright (1975) points out, that "musical meaning, like all meaning, is not the intrinsic property of an object, but arises out of the relationship between the object and the observer" (p. 421). Because perception of music mood might be dependent on a number of variables in a subject's background, rather than trying to relate type of music to a subject's mood response, perhaps researchers would be more successful in predicting this response from a combination of variables such as the personal history of the subject and his/her musical training in addition to the type of music the subject is to hear. This type of research would involve multivariate analysis rather than the bivariate analysis employed in this study.

The low correlation found between ratings of music mood and changes in pretest-posttest mood on the evaluative (negative-positive) dimension of the semantic differential as well as the larger difference found between pretest-posttest mood ratings on the activity dimension (tense-relaxed) in comparison to the other two dimensions is similar to the results of Tannenbaum's (1956) study on the effects of music on judgements of drama. This suggests that the effects of music might be generally in the area of potency and activity, regardless of whether they are in relation to judgements of drama, mood, or perhaps other concepts.

The foregoing interpretations of results assume that the direction of causality underlying the correlation between perceived mood of music and mood change runs from perception of music mood to change in mood. However, several other interpretations of this correlation are possible.

Firstly, underlying causality may have run in the opposite direction, from change in mood to reports of music mood. Because questions regarding pretest and posttest mood appeared before questions about the mood of the music, a "halo" effect could have occurred, with answers to the mood questions influencing answers to the music mood questions.

Secondly, subjects may have not been able to discriminate between their own mood and the mood of the music. The assumption that subjects can and do make such discriminations has not been thoroughly researched. However, in one study conducted by Swanwick (1975), subjects listened to several tonal phrases after each of which they reported on what the music was like as well as what they felt like on several semantic scales. Subjects did distinguish between the two conditions, although they commented that the distinction was "hard to get consistently clear" (p. 21).

Finally, a third unspecified variable or process could have produced the relationship between mood changes and perceived music mood.

In comparing differences in pretest-posttest mood scores to differences in retroactive pretest-posttest scores, the group means of these measures as shown in Figure 1 display a differing pattern of results than the breakdown of frequency and direction of change in these measures as shown in Tables 1 and 2. This is because the group means take into account the amount of reported change in mood whereas the tables show only the direction of this change. However, group means do not allow for examination of direction of individual change in mood. For example, 80% of subjects could have reported no change between pretest and posttest mood, and 20% could have

reported a large change of several steps in the same direction on the semantic scales. A comparison of group means on the two tests would show a change in mood even though the majority of subjects reported no change.

Because of the more detailed account of the direction of individual mood changes given in Tables 1 and 2, these results will be used as the basis of interpretation of data.

The pretest-posttest as compared to retroactive pretest-posttest differences in mood showed more change towards the relaxed and positive pole. The retroactive pretest-posttest differences in comparison to the pretest-posttest differences showed more change towards the happy pole, and more subjects reported their mood as the same in terms of relaxation and positiveness.

These results are difficult to interpret and somewhat contradictory. The observation that more people reported their mood as the same on the retroactive pretest-posttest comparison as opposed to the pretest-posttest comparison could be explained by retroactive inhibition (Klausmeier, 1975). Because the reporting of mood on the retroactive pretest followed the reporting of posttest mood, posttest mood reporting could have interfered with memory of pretest mood, and caused some subjects to report their retroactive pretest mood as more similar to their

posttest mood rather than pretest mood.

However, mood reports on the sad-happy dimension of the semantic differential contradict this interpretation. More subjects reported their mood as the same in the pretest-posttest as compared to the retroactive pretest-posttest comparison, and more subjects reported feeling more happy in the retroactive pretest-posttest as opposed to the pretest-posttest comparison. This might have been due to a change in rating standards adopted by subjects as in the Howard et al. study (1979). After hearing the music, which might have put them in a better mood, some subjects could have realized that they were more sad before the music than they had reported in the pretest, which would explain the results.

Differences in mood reports between pretest, retroactive pretest, and posttest measures may also have been the result of the inability of subjects to discriminate their mood on a seven point scale. Perhaps some subjects could only pinpoint their mood within a range of a few scale steps. Any change reported in mood within this range would not be due to experienced mood change, but rather to imprecision in ability to report mood.

Experience of Music

As predicted, the predominant mode of reported experience of the music for this group of subjects was in the form of imagery. This finding is especially significant as subjects in this study listened to a different piece of music, and represented a different age group and occupational background than Osborne's (1981) subjects. The result therefore lends support to Osborne's suggestion that imagery may be the dominant mode of response to music.

A sizeable proportion of the images reported by subjects involved a nature theme. It is interesting to note that Longfellow's "Hiawatha" (Osborn & Osborn, 1944), claimed by some to have had an influence on Dvořák and the symphony, is replete with nature imagery. This raises the question of whether extra-musical meaning (beyond the abstract patterns of tones) of such a complex form as nature imagery can be communicated through tones.

Little empirical research has been done in the area. However, in one notable experiment performed by Wells (1929), subjects were asked to match unknown compositions with their programmatic titles when both were presented in random order. Only a small portion of the compositions were correctly matched with their programmatic titles by the majority of subjects. These findings suggest that the

intended meanings of compositions are not easily interpreted by listeners, and shed doubt on the possibility of complex nature imagery being communicated through music. However, because of the paucity of empirical research in the area, the question of communication of intended musical meaning is open to debate.

The moderate relationship found between frequencies of emotion and imagery responses lends support to previous suggestions that the emotional response may be the basis of the imagery response to music (Odbert, Karwoski & Eckerson, 1942).

Several problems with measurement of experience of music should be pointed out. Subjects in this study were asked to relate their experiences of the music in an open-ended, written form. This method of gathering data involves variables which may have interfered with the investigation of experience.

Firstly, communicating ideas in written form requires verbal facility. If a subject was not able to express his thoughts adequately in this form, then his experience of the music could not have been properly assessed.

Secondly, self-report data is vulnerable to problems of reactivity such as response sets and the influence of

the demand characteristics of the experimental situation (Neale & Liebert, 1980).

Mood and Experience of Music

The inverse relationship found between the frequency of sensation as a response to music and the changes in mood from pretest to posttest reports, as well as between the frequency of sensation and the perceived music mood has not been documented in previous research. However, these findings can be related to Edward Bullough's theory of psychical distance (1979). According to Bullough, psychical distance in relation to the apperception of art is obtainable by "separating the object and its appeal from one's own self, by putting it out of gear with practical needs and ends" (p. 349). He provides an illustration of psychical distance with the following example:

> Imagine a fog at sea: for most people it is an experience of acute unpleasantness. Apart from the physical annoyance and remoter forms of discomfort such as delays, it is apt to produce feelings of peculiar anxiety, fears of invisible dangers, strains of watching and listening for distant and unlocalized signals.... Nevertheless, a fog at sea can be a source of intense relish and enjoyment. Abstract from the experience of the sea fog, for the moment, its danger and practical unpleasantness...[and] direct the attention to the features "objectively" constituting the phenomenon - the veil surrounding you with an opaqueness as of transparent milk, blurring the outline of

> things and distracting their shapes into weird grotesqueness; observe the carrying-power of the air...and the experience may acquire, in its uncanny mingling of repose and terror, a flavor of such concentrated poinancy and delight as to contrast sharply with the blind and distempered anxiety of its other aspects (p. 348).

These two viewpoints demonstrate two types of apperception of the fog, the first one being underdistanced, and the second one involving psychical distance which is associated with true aesthetic appreciation and enjoyment.

Sensations, as defined in this study, might be thought of as the product of the underdistancing involved in a physiological response to music. According to Bullough's theory, this attitude would interfere with aesthetic appreciation and would therefore be inversely related to a more enjoyable mood and perception of music. This prediction is in accordance with the findings of this study.

As evident from Tables 6 and 7, the correlations between the frequency of sensation as a response to the music and the perception of music mood, as well as the correlations between the frequency of sensation and the change in pretest-posttest mood are lower for the evaluation (negative-positive) semantic scale than for the

other two scales. These findings are again in accordance with Tannenbaum's (1956) conclusions, and suggest perhaps that when music is related to, or has an effect on mood, this effect is most pronounced in terms of judgements about the potency and activity of mood, and less pronounced in terms of evaluative judgements of mood. This hypothesis requires testing within an experimental design which employs more semantic scales.

Background and Experience of Music

As predicted, no consistent relationship was found between formal music training and frequency of imagery response to the music, which runs directly counter to the conclusions suggested by Myers (1922) and Vernon (1930) in their research. There was also no consistent relationship found between other background measures and mode of response to music except for hours per week spent listening to music and frequency of emotional response. These results suggest that individual mode of response to music may be independent of situation and personal history, and that imagery is the dominant mode of this response. More research needs to be done with other subjects and musical selections to determine the accuracy of this conclusion.

The relationship found between hours per week spent listening to music and frequency of emotional response to

the music has not been documented in previous research and therefore needs to be further explored.

Background and Mood Measures

The inverse relationship found between years of formal music training and change towards relaxation from pretest to posttest mood, as well as the inverse relationship found between years of formal music training and perceived mood of the music in terms of relaxation (activity dimension) has not been documented in previous studies employing self-report measures of mood, and therefore requires further research.

Directions for Future Research

The goal of this study was to explore the relationships between variables involved in subjects' experiences of music. A case study approach was utilized with a small number of subjects in order to thoroughly explore these relationships, and hypotheses were suggested based on the results.

An obvious direction for future research would be to test these hypotheses under experimental conditions using more selections of music representing a variety of musical styles with larger samples of subjects from different populations.

Another direction for the future might be to increase the complexity of experimental designs. As mentioned earlier in relation to the prediction of the effects of music on mood, perhaps the simultaneous study of several predictor variables such as the personal and educational backgrounds of subjects might increase the accuracy of prediction of a dependent variable which seems to display a great deal of individual variation such as the experience of, or response to music.

A third suggested area of future exploration which also embodies an increase in complexity of experimental design involves the simultaneous study of several dependent variables in relation to an independent variable. The effects of music, especially in the area of mood, could be most ideally studied in this way. For example, the physiological responses of subjects to various compositions could be studied in addition to their self-reports of mood responses as well as behavioral responses such as posture. This simultaneous exploration of physiological, behavioral, and self-report data would provide a more encompassing definition of the effect of music on mood than would the study of these responses individually.

Summary

The purpose of this study was to investigate the experiences of a small group of subjects in relation to one piece of music. Although subjects generally reported feeling more relaxed, happy and positive after they heard the music in comparison to before, the directions of these mood changes displayed a substantial amount of variability and were related to perception of music mood. The dominant mode of response to the music was in the form of imagery which was not related to amount of formal music training. An inverse relationship was found between frequency of sensation as a response to the music and the perception of music mood as being relaxed and happy. Similarily, an inverse relationship was found between the reported change towards feeling more relaxed and happy after the music in comparison to before, and the frequency of sensation as a response to the music.

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Note 1. The creative arts therapies. Pamphlet distributed by the Creative Arts Therapies National Associations. No date.

APPENDIX A

Experimental Instructions

Before Experiment Begins:

This research project involves exploration of the way people react to music. You will be asked to listen to a piece of music and then try to communicate as best you can your total experience of the music in written form. I am looking for nothing other than how you experience the music.

Before I begin playing the music I would like you to answer numbers one and two of the questionnaire.

Before Playing the Music:

You will now hear some music. Try to put your attention wholly on the music and become totally involved with it.

After Playing the Music:

Please answer the rest of the questions on your form. If you do not understand the meaning of a question, please ask me about it.

APPENDIX B

1. Describe your mood at this moment. (For example: "I am tired and feel somewhat depressed, feel like a walk or a chat with a friend, need some relaxation" etc.)

2. Place an X on the line that best describes your mood in relation to the adjectives below.

(example: Happy _ X _ _ _ _ _ Sad)

<------- ------->
more happy more sad

Tense _ _ _ _ _ _ _ Relaxed

Happy _ _ _ _ _ _ _ Sad

Negative _ _ _ _ _ _ _ Positive

APPENDIX B

3. Please describe in detail the reactions you had to the music. Include any thoughts, emotions, images, bodily sensations, or anything else you experienced. Write it down in any way you like but try to communicate your experience as accurately as you can in written form. There is no right or wrong answer. Simply describe your experience. Reread these instructions.

APPENDIX B

4. Please describe the mood you were in right after the music ended .

5. Place an X on the line that best describes the mood you were in right after the music ended in relation to the adjectives below.

Happy _ _ _ _ _ _ _ _ Sad

Tense _ _ _ _ _ _ _ _ Relaxed

Negative _ _ _ _ _ _ _ _ Positive

APPENDIX B

6. Please describe again the mood you were in before you listened to the music. Do not look back at your previous answer. If you have changed your opinion about your mood, feel free to put this down. This is not a memory test.

7. Without looking back at your previous answer (#2), place an X on the line that best describes the mood you were in before you listened to the music in relation to the adjectives below.

Negative _ _ _ _ _ _ _ _ Positive

Happy _ _ _ _ _ _ _ _ Sad

Tense _ _ _ _ _ _ _ _ Relaxed

APPENDIX B

8. What mood(s) or emotion(s) do you think were portrayed in the music ? Please do not report the mood you were in while listening to the music, but rather the mood of the music.

9. Place an X on the line that best describes the predominant mood portrayed in the music in relation to the adjectives below.

Tense _ _ _ _ _ _ _ _ Relaxed

Negative _ _ _ _ _ _ _ _ Positive

Happy _ _ _ _ _ _ _ _ Sad

APPENDIX B

10. Personal Data:

Age _____

Sex _____

Occupation _____

Number of years of formal training in music _____

_____

What musical instruments do you, or have you played?

_____

_____

On the average, how many hours per week do you spend listening to music? _____

What kind of music do you enjoy listening to? _____

_____

_____

Hobbies and interests: _____

_____

_____

_____